

Total No. of Questions : 8]

SEAT No. :

PA-2673

[Total No. of Pages : 2

[5927]-458

**B.E (Mechanical/Automobile)**

**(Honors/Minors)**

**MODELLING AND SIMULATION OF EHV**

**(2019 Pattern) (Semester - VII) (402034MJ)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Draw the neat sketch wherever necessary.*

- Q1)** a) Explain Battery Management System along with its main features? [4]  
b) Explain The Electric Machine Control System (EMCS) and The Stability Control System (SCS) with its important features? [8]  
c) What is Battery/Cell Control System in EV? Explain with its functions and working principal? [8]

OR

- Q2)** a) Explain Torque and speed coupling in electric vehicle? [4]  
b) Explain Electronic Control Unit of electric vehicle with its types and working principal? [8]  
c) Explain the importance of Sensor Management and Integration for electric vehicle with functional and application point of view? [8]

- Q3)** a) Explain, "Placement of Motors" in electric vehicle system? [8]  
b) Explain, "Battery and Motion Transmission Systems" in electric vehicle system? [8]

OR

- Q4)** a) List and explain with suitable sketches, the configurations of possible drivetrain systems in electric vehicle? [8]  
b) Explain Propulsion and Power distribution system in electric vehicle with its main components? [8]

**P.T.O.**

- Q5) a) What are Requirements of body structural system for a road vehicle?[8]**  
**b) Explain causes for safety-related failure for lithium ion battery? [8]**

OR

- Q6) a) What do you mean by dynamics of motor vehicle? List out various force and performance parameters consider in it? [8]**  
**b) Explain Chassis frame layout with suitable sketch? Also list out various types Loads on the Chassis frame? [8]**

- Q7) a) Explain Vehicle Structure design against Noise and Vibration exposure with suitable sketches? [8]**  
**b) Explain the phases involved in Crashworthiness Design along with its important features? [10]**

OR

- Q8) a) Explain Noise Factors & Failure Modes in electric vehicle? [10]**  
**b) What are Human Characteristics and Capabilities in ergonomics design of electric vehicle? [8]**

